

Serial No. 10/773,692

CLAIMS

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Claims 1-19. (Previously Cancelled)

20. (Currently Amended) A mobile object having a communications unit operative to transmit geographic locations to a principal entity over a wireless communications system, the communications unit comprising:

a GPS receiver ~~operative~~ configured to determine a first position of the mobile object and a second position of the mobile object;

a controller ~~operative~~ configured to determine whether the second position is within a geographic area that includes the first position;

a transceiver ~~operative~~ configured to send a full position transmission comprising absolute latitude and longitude coordinates of the first position of the mobile object to the principal entity, wherein

the transceiver, responsive to a determination that the second position is within the geographic area, is further ~~operative~~ configured to send a delta position transmission to the principal entity comprising a numeric value representing longitude and latitude coordinates of the second position relative to the previously transmitted absolute coordinates of the first position, and

the transceiver, responsive to a determination that the second position is outside the geographic area, is further ~~operative~~ configured to send a full position transmission comprising absolute latitude and longitude coordinates of the second position of the mobile object to the principal entity.

21. (Previously Presented) The communications unit of claim 20, wherein the geographic area is a predetermined size based on the capacity of the wireless communications system.

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22. (Previously Presented) The communications unit of claim 21, wherein the predetermined size of the geographic area is determined by calculating the largest geographic area in which a geographic position can be expressed as a relative position to previously transmitted absolute coordinates using a maximum bit value of the wireless communications system's most succinct message.

23. (Currently Amended) The communications unit of claim 20, wherein the geographic area is a predetermined size based on a the portion of the capacity of the wireless communications system that is allocated for position data.

24. (Previously Presented) The communications unit of claim 20, wherein the geographic area is centered at the previously transmitted absolute coordinates of the first position.

25. (Currently Amended) The communications unit of claim 20, wherein the GPS receiver is further ~~operative~~ configured to receive absolute longitude and latitude coordinates for the mobile object.

26. (Currently Amended) The communications unit of claim 25, wherein the controller is ~~operative~~ configured to determine whether a set of coordinates received via the GPS receiver is the first set of coordinates received within a continuous period of sequential asynchronous location identification.

27. (Currently Amended) The communications unit of claim 26, wherein the transceiver is ~~operative~~ configured to send a full position transmission of the absolute coordinates of the mobile object to the principal entity if the set of coordinates received by the GPS receiver is the first set of coordinates received within the period.

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28. (Previously Presented) The communications unit of claim 20, wherein the wireless communications system supports a message having a data payload allocated for position data of less than forty-one bits.

29. (Previously Presented) The communications unit of claim 20, wherein the geographic area is independent of a constant reference geographic location.

30. (Previously Presented) The communications unit of claim 20, wherein the geographic area is independent of a fixed geographic reference point.

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31. (Currently Amended) A communications unit for efficient transmission of geographic locations of a mobile object to a principal entity over a wireless communications system, comprising:

a GPS receiver for receiving absolute latitude and longitude coordinates of the mobile object at a first position;

a controller ~~operative~~ configured to determine whether the absolute coordinates are the first coordinates received during a continuous period of sequential asynchronous location identification, wherein the controller establishes a geographic area centered at the absolute coordinates and having a predetermined size in the event that the absolute coordinates are the first coordinates and determines whether the absolute coordinates are within a previously established geographic area centered at previously transmitted absolute coordinates and having a predetermined size if the coordinates are not the first coordinates; and

a transceiver, coupled to the controller, ~~operative~~ configured to send a full position transmission comprising the absolute coordinates to the principal entity if the coordinates are the first coordinates received during the period, the transceiver further ~~operative~~ configured to send a delta position transmission to the principal entity comprising a numeric value representing longitude and latitude coordinates of the first position relative to previously transmitted absolute coordinates if the coordinates are within the previously established geographic area, the transceiver further ~~operative~~ configured to send a full position transmission comprising the absolute coordinates to the principal entity and establishing a geographic area centered at the absolute coordinates and having a predetermined size if the coordinates are outside the previously established geographic area.

32. (Previously Presented) The communications unit of claim 31, wherein the predetermined size of a geographic area is based on the capacity of the wireless communications system.

33. (Currently Amended) The communications unit of claim 31, wherein the predetermined size of a geographic area is based on a the portion of the capacity of the wireless communications system that is allocated for position data.

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34. (Previously Presented) The communications unit of claim 31, wherein the wireless communications system supports a message having a data payload allocated for position data of less than forty-one bits.

35. (Previously Presented) The communications unit of claim 31, wherein the geographic area is independent of a constant reference geographic location.

36. (Previously Presented) The communications unit of claim 31, wherein the geographic area is independent of a fixed geographic reference point.

37. (Previously Presented) The communications unit of claim 31, wherein the numeric value of the delta position transmission and the previously transmitted absolute coordinates are used by the principal entity to calculate the absolute coordinates of the mobile object at the first position.

38. (Previously Presented) The communications unit of claim 31, wherein the predetermined size of the geographic area is determined by calculating the largest geographic area in which a geographic position can be expressed as a relative position to previously transmitted absolute coordinates using a maximum bit value of the wireless communications system's most succinct message.